COMPUTER VISION FINAL

CLINTON ANTONY RAJASEKAR

DSA – G2

Resources:

Kaggle: **Chess Positions FEN Prediction (EDA + CNN Model)**

Link: https://www.kaggle.com/code/ibrahimsoboh/chess-positions-fen-prediction-eda-cnn-model

Google Scholar: Chess Position Evaluation Using Radial Basis Function Neural Networks.

Link: https://www.hindawi.com/journals/complexity/2023/7143943/

For **Data Exploration and Understanding:**

Blog: "A Comprehensive Guide to Exploratory Data Analysis" (URL: https://towardsdatascience.com/a-comprehensive-guide-to-exploratory-data-analysis-ebd8e6987c6e)

YouTube Video: "Introduction to Data Exploration and Visualization" (URL: https://www.youtube.com/watch?v=2Uz8GOzRwWA)

This strategy is likely to work because:

- Comprehensive data exploration ensures a better understanding of the dataset, leading to more informed decisions during preprocessing and modelling stages.
- Effective data preprocessing techniques help in cleaning and transforming the data to make it suitable for machine learning models.
- Trying out different models enables us to find the best algorithm that fits the problem's characteristics.
- Hyperparameter tuning optimizes model performance and generalization.
- Evaluating the model using various performance metrics provides a holistic view of its strengths and limitations.
- Interpretation and analysis offer valuable insights into the problem domain and model behaviour, aiding decision-making, and potential model enhancements.

By following this strategy, we can systematically approach the problem, make informed choices at each stage, and improve the chances of developing a successful and accurate classification model for the chess positions dataset.

Hyperparameter Selection:

- For each selected model, we identify the hyperparameters that control the model's behaviour and performance.
- We use techniques like cross-validation to find the optimal hyperparameters, balancing model complexity and overfitting.
- For example, in Random Forests, we tune parameters like the number of estimators (trees) and maximum depth of trees.
- In SVM, we tune the kernel type, regularization parameter (C), and gamma for non-linear kernels.
- For Neural Networks, we tune the number of hidden layers, neurons per layer, learning rate, and batch size.

Bibliographical references are present:

Chess Position Evaluation Using Radial Basis Function Neural Networks:

References :

1. M. Campbell, A. Hoane, and F.-H. Hsu, “Deep blue,” *Artificial Intelligence*, vol. 134, no. 1-2, pp. 57–83, 2002.
   View at: Publisher Site | Google Scholar
2. B. Oshri and N. Khandwala, “Predicting Moves in Chess using Convolutional Neural Networks,” in *Stanford CS231n Course Report*, Stanford University, Californica, CA, USA, 2015.
   View at: Google Scholar
3. E. David, N. S. Netanyahu, and L. Wolf, “Deepchess: end-to-end deep neural network for automatic learning in chess,” 2017, http://arxiv.org/abs/1711.09667.
   View at: Google Scholar